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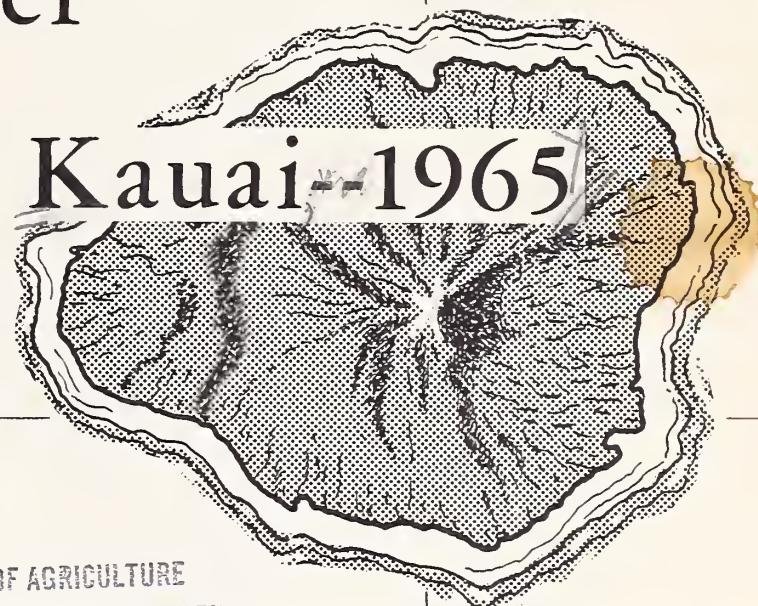
Plantation Timber

on the Island of Kauai-1965

Nobuo Honda
Wesley H. C. Wong, Jr.
Robert E. Nelson

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CURRENT SERIAL RECORDS



Pacific Southwest Forest and Range
Experiment Station, Forest Service,
U. S. Department of Agriculture,
Berkeley, California 94701

and

Division of Forestry,
Department of Land
and Natural Resources,
State of Hawaii,
Honolulu, Hawaii 96813

Foreword

This report is one of a series about planted timber on major islands in the State of Hawaii. The report for the Island of Hawaii was published in 1966. Summarized here are the results of a survey of timber in planted forests on the Island of Kauai. This inventory is a supplement to the initial Forest Survey of the State completed in 1963. That Survey indicated the importance of forest plantations as a timber resource, but provided no details. This bulletin reports: (a) location and acreage of each planted stand, (b) species composition and age of stand, (c) timber volume and quality, and (d) ownership of planted timber.

The study is a cooperative undertaking of the Division of Forestry, Hawaii Department of Land and Natural Resources, and the Pacific Southwest Forest and Range Experiment Station, Forest Service, U.S. Department of Agriculture. It was conducted under the direction of Robert E. Nelson, chief, Hawaii Forestry Research Center, Pacific Southwest Forest and Range Experiment Station. Nobuo Honda, forester, Hawaii Division of Forestry, helped develop plans for the plantation inventory and supervised the field work.

In 1966, responsibility for supervision of the Forest Survey in the Pacific Coast States and Hawaii was shifted to the Pacific Northwest Forest and Range Experiment Station, but field work in Hawaii will continue to be a joint effort of the Hawaii State Division of Forestry and the Pacific Southwest Station's Forestry Research Center in Hawaii.

Many individuals aided in various phases of the Survey. Special acknowledgment is due to the field crew: Forester W. Wong and crew members M. S. Andrade, M. H. Andrade, and E. Petteys--all of the Hawaii Division of Forestry.

E. M. Hornibrook, formerly in charge of the Forest Survey, Pacific Southwest Station, and Russell K. LeBarron, former forest ecologist, Hawaii Division of Forestry, aided in developing plans for the study.

Robert M. Miller, systems analyst, Pacific Southwest Station, developed specifications for processing data by electronic computers. The Computing Center at the University of Hawaii processed the data.

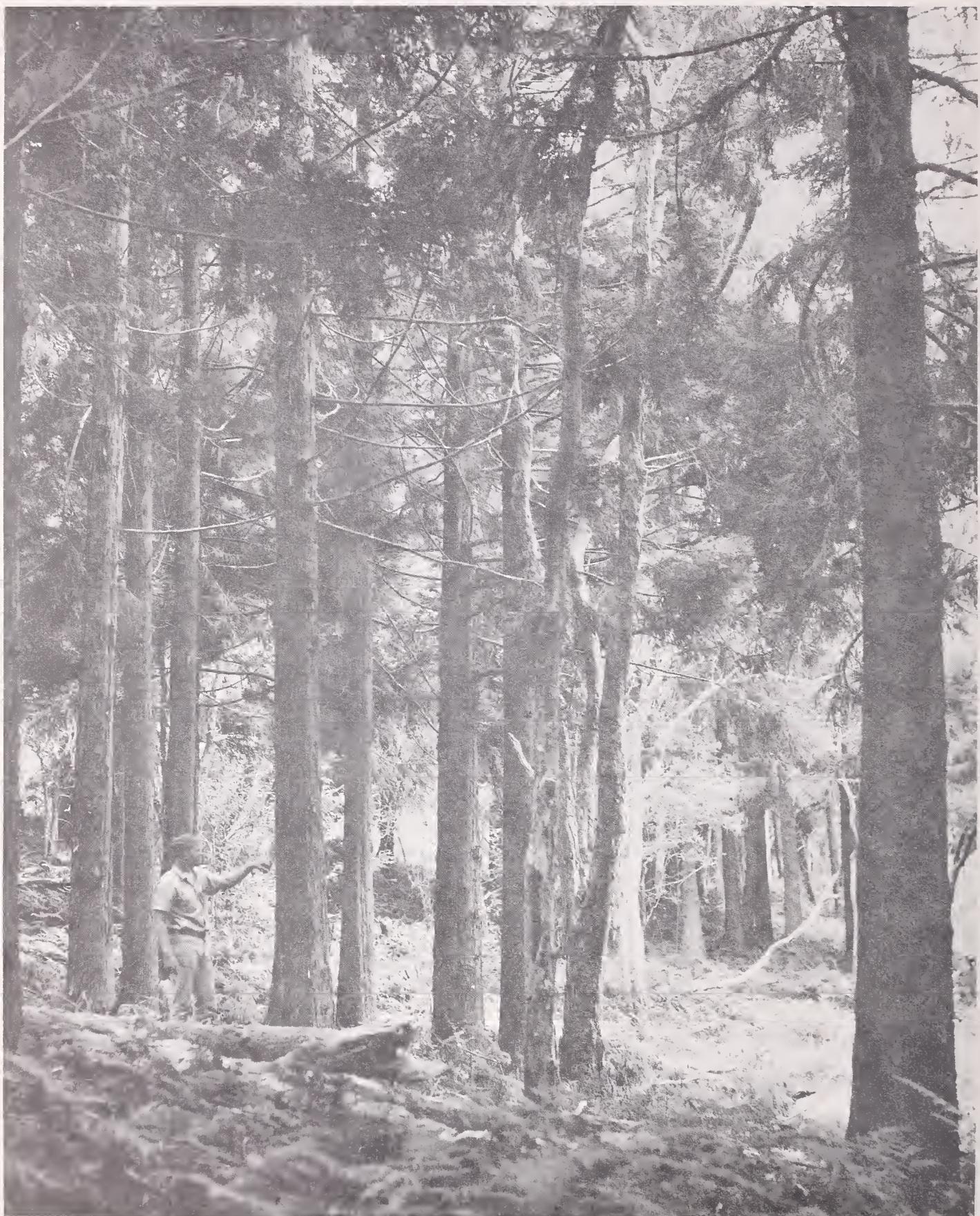
Max F. Landgraf, State forester, and Ralph E. Daehler, district forester, State of Hawaii provided generous cooperation and assistance in the conduct of the survey.

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The Authors

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Planted sugi groves in the Na Pali Kona Forest Reserve.
Some of the finest recreational areas in the Reserve are
found here.

The Island of Kauai lies at the northwest end of the Hawaiian chain. Formed by volcanic action, most of the island's 551 square miles of land is of steep, rugged, mountainous topography. But in the "coastal plains" there are areas of level or gently sloping lands. Mt. Waialeale rises to 5,080 feet in the center of the island. This peak is reportedly the wettest spot on earth, with an average annual rainfall of 466 inches. Rainfall is much less in coastal areas just a few miles away, where less than 20 inches fall in some parts of the southwest shore.

Sugar production is the most important industry on the island. Most lands suited to growing sugar cane are used for that purpose. Pineapple production has decreased sharply in recent years; relatively little acreage is used for this or other cultivated crops.

Cattle graze on a large acreage throughout most of Kauai. Although much of the grazed land is forested, grazing is excluded from large areas of Forest Reserves.

The Reserves are public and private lands administered by the State for the management and protection of watersheds and other forest values.

Tourism is important to the island's economy. Kauai's verdant beauty and rugged scenery attract many tourists each year.

The first forest inventory in Hawaii found that a high proportion of the Island of Kauai is forest land.¹ Of its total land area of 353,000 acres, some 137,000 acres are commercial forest land, holding about 43 million board feet of sawtimber. In addition, there are about 86,000 acres of noncommercial forest land (fig. 1,2).

¹Nelson, Robert E., and Wheeler, Philip R. *Forest resources of Hawaii--1961*. Forestry Div., Dep. Land and Natural Resources, State of Hawaii, in cooperation with the Pacific SW. Forest & Range Exp. Sta., Forest Serv., U.S. Dep. Agr., 48 pp., illus. 1963.

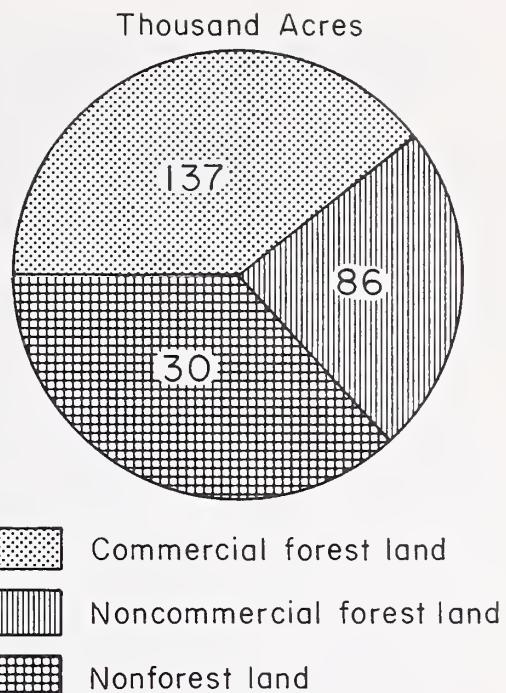


Figure 1.--Forest and nonforest land acreages on the Island of Kauai, 1961.

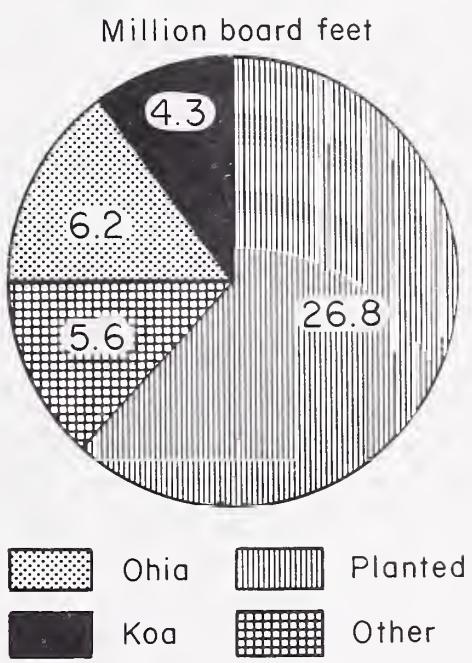
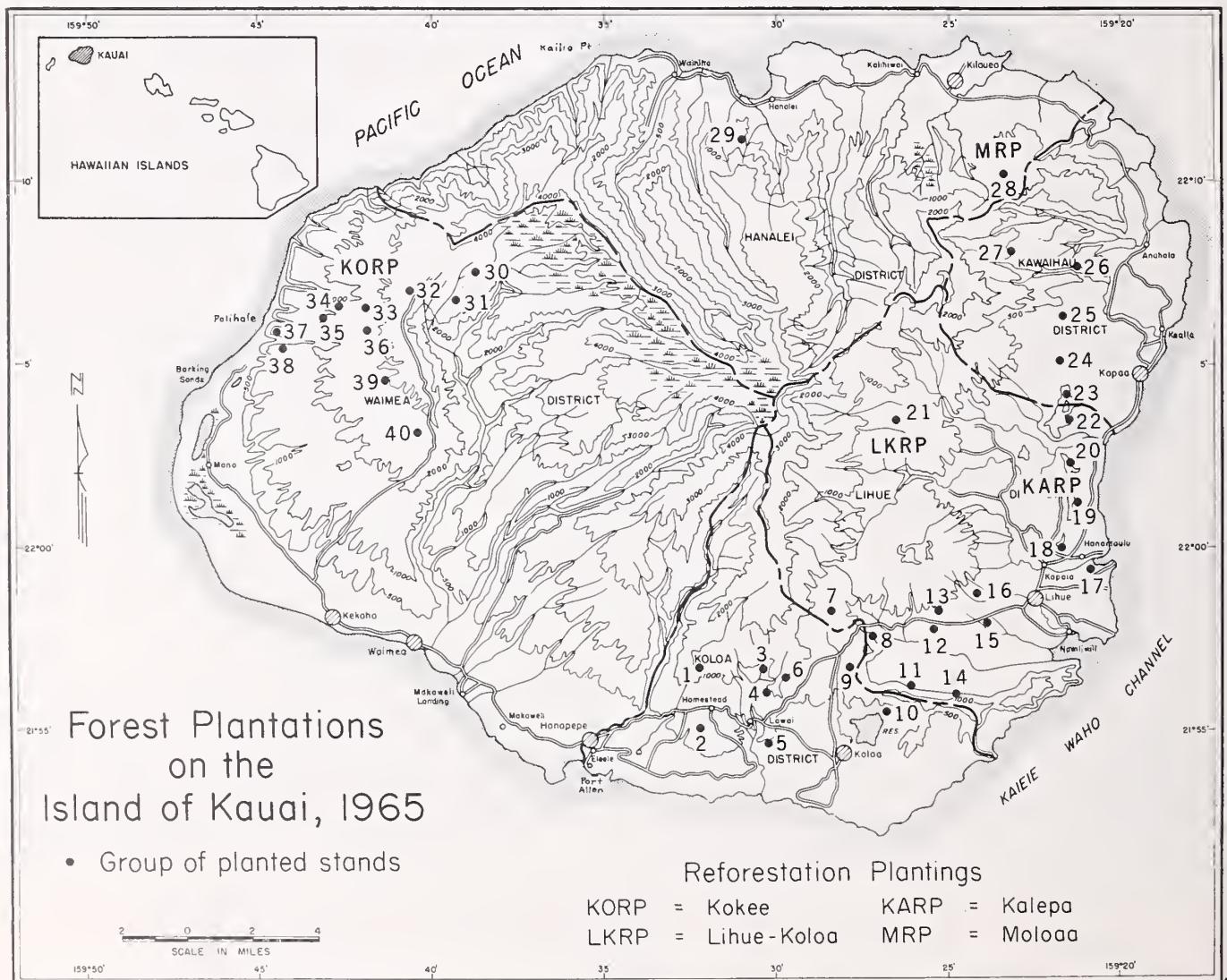


Figure 2.--Sawtimber volumes on the Island of Kauai, 1961.

By far, most of the forest acreage is native or naturalized types. These forests contain little volume of sawtimber. Only about 25,000 acres of the ohia (*Metrosideros collina*), koa (*Acacia koa*)² and naturally regenerated silk-oak (*Grevillea robusta*) types were considered commercial types in the initial forest survey.¹ Sawtimber in these stands amounts to about 16 million board feet. Nearly 110,000 acres of commercial forest land have noncommercial forest or brush cover.¹

The small acreage of planted forests of introduced species on the Island of Kauai holds more volume of sawtimber than do the native forests. Plantation yields per acre are much greater and timber is generally of higher quality than native timber. These forest plantings were started more than 50 years ago, principally to develop a supply of fuelwood and fence posts for sugar plantations and ranches. In the late 1930's and early 1940's, plantings were accelerated by the State Division of Forestry to develop a timber supply for the future.

²A small acreage of planted koa forest is included in the over-all acreage of native forest type because of the difficulty of differentiation. In general, the planted koa forest has not developed into good timber stands.



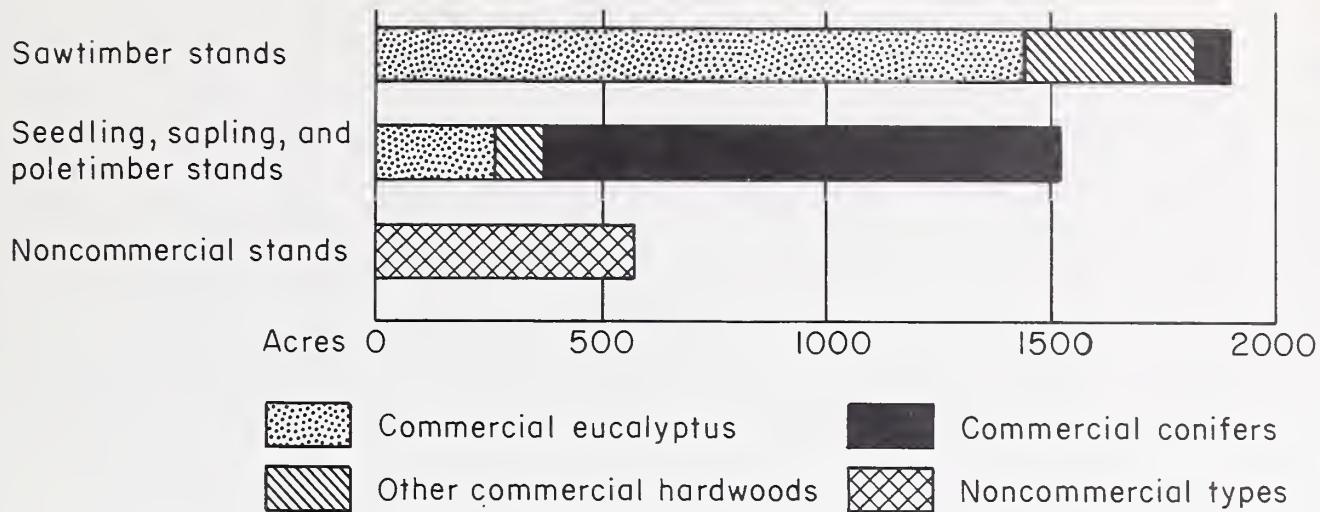


Figure 3.--Acreage of commercial and noncommercial plantation stands, by stand-size class and forest type, Island of Kauai, 1965.

Although the total volume is only about 27 million board feet, the plantation timber is mostly accessible and has a greater potential for industrial use than the native timber. Therefore, in 1965 we made a stand-by-stand inventory to obtain information on the plantation acreage and timber volume, quality, and ownership. This report summarizes data compiled for each plantation stand.

Forest Plantations

Timber Resources

Forest plantations on the Island of Kauai are distributed chiefly on the eastern, southeastern, and western portions of the island (see map and tables 10 and 11). In the east and southeast, most plantations are located 1 to 6 miles inland at elevations from 500 feet to 1,200 feet. In the west, plantings are from 3 to 8 miles inland and from 2,000 to 3,000 feet in elevation. The faster growing and higher volume-producing stands generally lie in the higher rainfall areas.

Earlier plantings, before the Civilian Conservation Corps programs of the late 30's, were in gullies and areas bordering croplands where sugar and pineapple could not be grown. Agricultural roads make these stands accessible. The CCC program, with its large labor force and slightly different objectives, concentrated on planting the steeper slopes and rugged mountain ridges. Access then was mostly by foot and horse trails. These areas now are not far from good access roads or jeep trails.

Area

Commercial forest plantations³ on the Island of Kauai total more than 3,400 acres in stands from 2 to 68 acres in size (tables 1-4; fig. 3). About 1,900 acres of these plantations are sawtimber stands. Another 1,500 acres are recently planted

³See definitions of terms in Appendix.



Molucca albizzia stands yield high sawtimber volumes. This stand No. 2160 averages 33,310 board feet per acre.



Eucalypts make up 70 percent of the sawtimber volume on Kauai, where mixed eucalyptus plantings are common. This stand of saligna (white bark) and tallowwood eucalyptus averages 37,000 board feet per acre.

seedling, sapling, and poletimber stands of commercial species, mostly conifers.

Eucalypts, mainly *Eucalyptus robusta*, make up 76 percent, or about 1,400 acres of the sawtimber stands. The acreage of hardwood sawtimber stands other than eucalypts totals about 370, and there are just under 100 acres of commercial conifer sawtimber stands. Pines (*Pinus* spp.) and other commercial conifers amount to about 76 percent of the recent plantings.

Besides commercial forest plantations there are nearly 600 acres of noncommercial types, mostly ironwood and paper-bark.

Timber Volume

Planted forests on Kauai contain nearly 27 million board feet of sawtimber (tables 5,6). Of the total, eucalyptus sawtimber makes up 70 percent, or nearly 19 million board feet. Robusta eucalyptus sawtimber alone amounts to 14.6 million board feet. Sawtimber volume in hardwoods other than eucalypts totals about 6 million board feet. Commercial conifers, such as Norfolk-Island-pine, sugi, and redwood, total nearly 2.2 million board feet.

About 40 percent of the sawtimber volume is in trees 19 to 29 inches d.b.h. (table 7). About 50 percent of the total volume is in trees smaller than 19 inches, and about 10 percent is in trees larger than 29 inches d.b.h.

The total growing stock volume in planted sawtimber stands amounts to about 5.7 million cubic feet (table 5). More than 72 percent, or about 4.2 million cubic feet of this volume, is in eucalypts. Robusta eucalyptus totals some 3.3 million cubic feet of growing stock. Other hardwoods total 1.1 million cubic feet, and conifers make up the remainder with less than 0.5 million cubic feet.

Poletimber and sapling and seedling stands contain additional volume of growing stock, but they were not measured.

Wood in cull trees in planted sawtimber stands totals nearly one-half million cubic feet (table 8). The 570 acres of noncommercial plantations hold an additional, much greater volume of wood in cull trees, but these stands were also not measured.

Ownership

The State of Hawaii owns nearly half of the forest plantations on the Island of Kauai (tables 2 and 9; fig. 4). Of the 3,994 acres tallied, including noncommercial types, the State owns 1,677 acres, or about 42 percent. Additional public ownership is Hawaiian Homes land amounting to 1,033 acres. This land is State-owned, set aside and administered by the Hawaiian Homes Commission for the benefit of people of Hawaiian ancestry. Private owners have 1,255 acres, or 31 percent; and county and municipal lands have 29 acres of forest plantations.

In volume, the State owns a lesser proportion of the timber because a substantial area of the State-owned plantations are the younger seedling, sapling, and pole-size stands. And a large portion of private stands are those in the older age groups

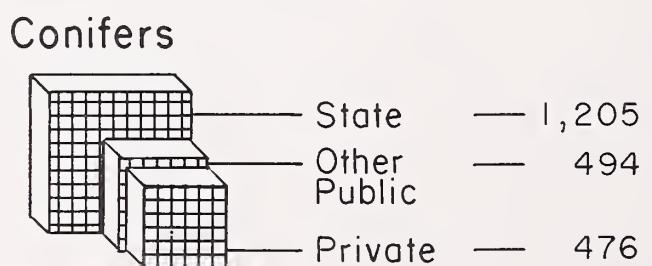
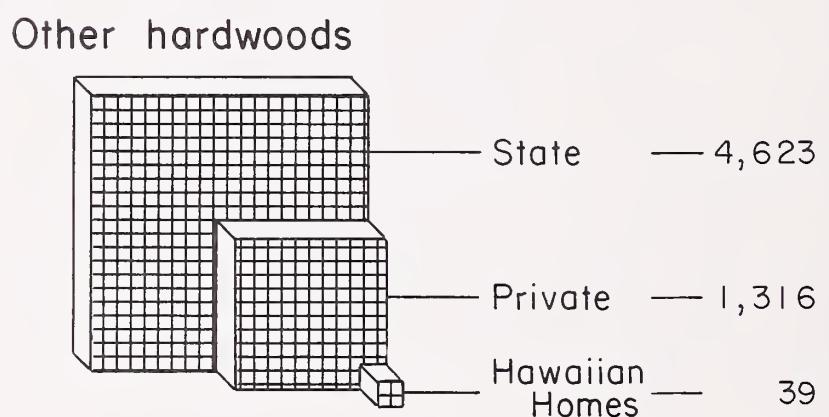
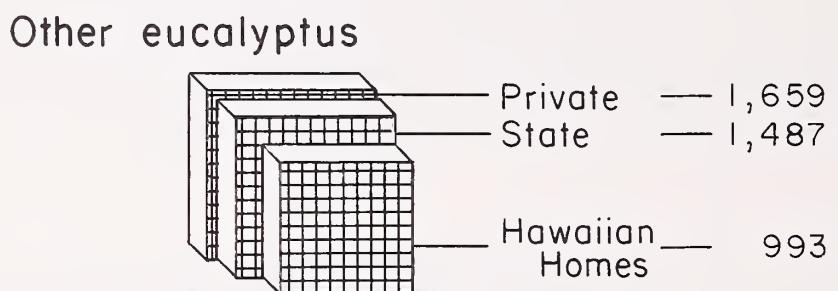
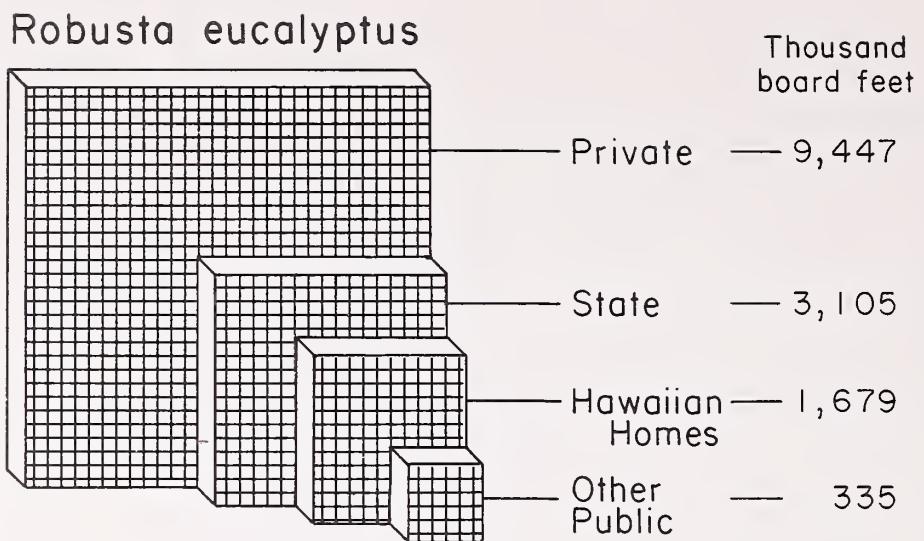


Figure 4. --Sawtimber volume in planted stands by species group and ownership class, Island of Kauai, 1965.

with higher yields. Private ownership totals 48 percent, or almost 13 million board feet, of the sawtimber volume; the State owns 39 percent or 10-1/2 million board feet. Hawaiian Homes owns almost 3 million board feet. Nearly 1 million board feet are in county and municipal ownership.

Age of Stands

Only about 550 acres of the commercial plantation timber stands are more than 40 years old (table 4). Practically all of the older stands are in the southeast part of the Island. Stands planted from 1926 to 1945 total more than 1,400 acres. Much of this acreage was planted between 1935 and 1941 by the Civilian Conservation Corps. Since 1945 nearly 1,500 acres of commercial plantations have been established. By far the greater part of these recent plantings has been done by the State Division of Forestry in the Kokee Reforestation Plantings.

Stand Yields

The average yield of sawtimber in planted sawtimber stands on Kauai is just over 14,000 board feet per acre. But yields vary greatly with stand age, species, site, history and condition of stand, and other factors. In general, the volumes in the better robusta eucalyptus and saligna eucalyptus stands more than 35 years old range from 30,000 to 40,000 board feet per acre. Most other hardwood species have lower yields. The highest stand average net volume measured was 69,000 board feet per acre in a Norfolk-Island-pine stand.

Timber Quality

Judged by log grades, Molucca albizzia is considered to be of better quality than other species (table 9); 59 percent of its sawtimber volume is in grades 1 and 2 factory lumber logs. Saligna, generally one of the eucalyptus species with higher log grades, has 53 percent of the volume in grades 1 and 2. Only 33 percent of the robusta eucalyptus is in grade 1 and 2 logs. Conifer species were not log-graded⁴.

Opportunity for Industrial Development

Forests are a major feature of the Island of Kauai. Nearly two-thirds of the land, or about 220,000 acres, supports some kind of forest growth.⁴ A large part of this is noncommercial forest land, but some 137,000 acres are commercial forest land that can produce crops of timber.

Most of the native forests are of particularly poor quality, often just brush. Thus, these poorly stocked or nonstocked native forests yield only small amounts of merchantable timber. The total volume of sawtimber in nearly 140,000 acres of native forests amounts to only 16 million board feet.

⁴Nelson and Wheeler. *Op. cit.*

Although continued small harvesting of fence posts, fuelwood, and miscellaneous products from native forests is likely, little acreage of the native stands offer prospects for sawtimber harvest.

Planted forests offer much better prospects. In contrast to the native forests, they have grown rapidly and now yield higher per-acre volumes of timber. In the slightly more than 1,900 acres of planted forests now grown to sawtimber size, the volume totals nearly 27 million board feet of sawtimber. Most of the forestation that produced this new timber resource was not done to grow sawtimber. Instead, trees were planted to control erosion, improve watershed cover, and provide fuelwood. Therefore, species planted were not necessarily selected on the basis of wood quality, but on the basis of adaptability and rapid growth. *Eucalyptus robusta*--a good sawtimber species--was highly favored. And so were several species that now offer little or no potential for sawtimber, such as ironwoods (*Casuarina* spp.) and paper-bark (*Melaleuca leucadendron*).

The success of some of these early plantings demonstrates that timber production potentials are far greater than might be inferred from the data on present total sawtimber volumes on this Island. We know that many valuable exotic timber species are adapted to the different forest sites. Timber yields can be prodigious. Under management, an average annual sawtimber growth rate of 1,000 board feet per acre can be expected from well-stocked forests on good sites.

Although its potential is limited, a small sawmilling industry conceivably could be based on the present timber resource. Such an industry would depend on the development of markets for the small volumes of specialized products for which the timber is useful. And it could only operate on a small scale or for a very few years.

There is, however, a potential to develop a much larger timber resource, an ample base for a significant large local milling industry. If only 20 percent of the 137,000 acres of presently little-used and unmanaged commercial forest land were planted to introduced species and managed, timber production would amount to more than 25 million board feet annually in about 30 years.

Recent forestation efforts by the State and to a much smaller extent by some private landowners are trying to capitalize on this potential. Species are being selected with consideration for wood qualities and adaptability to specific sites. Plantings are made in large blocks on lands where native forests are of particularly poor quality.

Since 1960, about 1,400 acres of land on Kauai have been reforested by the State Division of Forestry. This reforestation effort is being continued and should be expanded to bring a much greater forest area under management. The amount of reforestation accomplished during the next 10 years will determine in large part the amount of harvestable timber that might be available 30 to 40 years from now as a base for an economic industry.



Much of the native forest on Kauai is scrubby koa and ohia. Conversion of such types to planted forests can increase the timber resource and improve recreation and watershed values.



Slash and loblolly pines can be planted on the dry, eroding ridges below Kokee to improve watershed conditions. They also provide timber and improve recreation habitat.

Recreation Habitat and Watershed Protection

Forest plantations provide values besides timber. In fact, their value for watershed protection and for recreation use may exceed the value of timber harvests. Planted forests of introduced trees now provide the most attractive and heavily used forest recreation sites on the Island. Plantations established for watershed protection and erosion control have great value in improving esthetic values, on-site and from a distance. Planted forests can also provide improved wildlife habitat. Christmas trees can be produced in much greater numbers for local use or export.

These multiple benefits of planted forests accrue continuously year after year. In addition, periodic harvests of timber can be made without detracting from these recreation and watershed values. Public land managers and private owners, too, should take steps to develop all the potential benefits latent in these lands by improving the forests for timber production, recreation use, watershed protection, and wildlife habitat. It has been amply demonstrated on a small scale in the existing plantations that reforestation can enhance all these values.

Appendix

Definitions

Commercial and Noncommercial

Forest land: Land at least 10 percent stocked by forest trees of any size, or formerly having such tree cover and not currently developed for other use; and land supporting shrubs, the crowns covering more than 50 percent of the ground.

Commercial forest land: Forest land that is producing or can produce crops of industrial wood (usually sawtimber) and is not withdrawn from timber use.

Noncommercial forest land: (a) *Productive-reserved* forest land withdrawn from timber use through statute or administrative regulation, and (b) *unproductive* forest land incapable of yielding crops of industrial wood because of adverse site conditions.

Forest plantation: Planted forests in which at least 10 percent of the growing space is occupied by planted trees (exotic species in this report), regardless of native species predominance.

Commercial forest plantation: A plantation of commercial tree species on commercial forest land.

Noncommercial forest plantation: A plantation of noncommercial tree species or of commercial tree species planted on noncommercial forest land.

Commercial tree species: Tree species suitable for industrial wood products. Species suited only for fuelwood or fence posts are excluded. The following were tallied on plots:

Scientific Name	Common Name
<i>Acacia koa</i>	koa
<i>Acacia melanoxylon</i>	blackwood acacia
<i>Albizia falcata</i> (A. <i>moluccana</i>)	Molucca albizzia
<i>Araucaria cunninghamii</i>	hoop-pine
<i>Araucaria excelsa</i>	Norfolk-Island-pine
<i>Cryptomeria japonica</i>	sugi
<i>Eucalyptus citriodora</i>	lemon eucalyptus
<i>Eucalyptus microcorys</i>	tallowwood eucalyptus
<i>Eucalyptus paniculata</i>	gray ironbark eucalyptus
<i>Eucalyptus pilularis</i>	blackbutt eucalyptus
<i>Eucalyptus resinifera</i>	kinogum eucalyptus
<i>Eucalyptus robusta</i>	robusta eucalyptus
<i>Eucalyptus saligna</i>	saligna eucalyptus
<i>Eucalyptus sideroxylon</i>	red-ironbark eucalyptus
<i>Eucalyptus</i> spp.	unidentified eucalyptus
<i>Fraxinus uhdei</i>	tropical ash
<i>Grevillea robusta</i>	silk-oak
<i>Mangifera indica</i>	mango
<i>Metrosideros collina</i> (M. <i>polymorpha</i>)	ohia
<i>Sequoia sempervirens</i>	redwood
<i>Swietenia mahagoni</i>	West Indies mahogany
<i>Syncarpia glomulifera</i> (S. <i>laurifolia</i>)	turpentine-tree
<i>Tristaniopsis conferta</i>	brushbox

Noncommercial tree species: Tree species not now considered suitable for industrial products. The following were tallied on plots:

Scientific Name	Common Name
<i>Aleurites moluccana</i>	kukui (candlenut-tree)
<i>Casuarina</i> spp.	ironwoods
<i>Eucalyptus</i> sp.	unidentified eucalyptus
<i>Eugenia cumini</i>	Java-plum
<i>Hibiscus tiliaceus</i>	hau
<i>Melaleuca leucadendron</i>	paper-bark
<i>Melia azedarach</i>	pride-of-India
<i>Melochia indica</i>	melochia
<i>Myrsine</i> spp.	kolea

Hardwoods: Dicotyledonous trees; usually broadleaved.

Softwoods: Coniferous trees; usually evergreen; having needle or scale-like leaves.

Forest types: Forests which are predominantly of a single species and in which no other species makes up 25 percent or more of the stand, are designated by the single species such as robusta eucalyptus type, ohia type, or tropical ash type. Otherwise they are designated:

Commercial eucalyptus type: Planted stands predominantly of eucalyptus species, in which other hardwoods or conifers comprise less than 25 percent of the stand.

Commercial hardwood type: Planted stands predominantly of hardwoods other than the eucalypts in which conifers or eucalypts comprise less than 25 percent of the stand.

Commercial conifer type: Planted forests predominantly of conifers (e.g. Norfolk-Island-pine, sugi, pines, and redwood) in which eucalypts or other hardwoods comprise less than 25 percent of the stand.

Class of Timber

Growing stock: Live trees of good form and vigor and of species suited for industrial wood (commercial species).

Sawtimber trees: Live trees of commercial species of at least 11.0 inches diameter breast height which contain a butt half-log or a log which meets the specifications of standard lumber, or tie and timber log grades.

Pole timber trees: Live trees of commercial species between 5.0 and 10.9 inches d.b.h., having soundness and form necessary to develop into sawtimber trees.

Saplings and seedlings: Live trees of commercial species between 1.0 and 4.9 inches d.b.h. and less than 1 inch, respectively, which show promise of becoming sawtimber trees.

Sound cull trees: Live trees 1 inch d.b.h. or larger which do not qualify as growing stock because of species (noncommercial species), poor form, or excessive limbs.

Rotten cull trees: Live trees 1 inch d.b.h. or larger which are not growing stock or sound cull because of excessive rot.

Merchantable sawtimber: Wood in trees defined as sawtimber trees.

Volume

International 1/4-inch kerf log rule: A formula rule for estimating the board-foot volume of logs, by 4-foot log sections, V equals $0.905 (0.22D^2 - 0.71D)$.

Sawtimber volume: The net volume of the saw-log portion of sawtimber trees, in board feet, International 1/4-inch rule.

Saw-log portion: That part of the main bole of sawtimber trees between the stump and the merchantable top.

Merchantable top: The point on the bole above which a merchantable sawlog cannot be obtained; i.e., the point where the main stem divides into limbs or is less than 8 inches diameter inside bark.

Growing stock volume: Volume in cubic feet of sound wood in the bole of sawtimber and poletimber trees from stump to a minimum top diameter inside bark (d.i.b.) of 4.0 inches, or to the point where the main stem divides into limbs.

All timber volume: Volume in cubic feet of sound wood in the bole of growing stock and cull trees 5.0 inches d.b.h. or larger, from stump to a minimum top diameter inside bark (d.i.b.) of 4.0 inches.

Stand-Class Sizes

Sawtimber stands: Stands at least 10 percent stocked with growing-stock trees, half or more in sawtimber and poletimber trees, and sawtimber stocking at least equal to poletimber.

Poletimber stands: Stands failing to qualify as sawtimber but at least 10 percent stocked with growing-stock trees, at least half poletimber.

Sapling and seedling stands: Stands not qualifying as sawtimber or poletimber, but at least 10 percent stocked with growing-stock trees.

Nonstocked: Commercial forest lands less than 10 percent stocked with growing-stock trees.

Miscellaneous

Diameter breast height (d.b.h.): Tree diameter in inches, outside bark, measured at 4-1/2 feet above the ground for normal trees, and 18 inches above the stilt or swell for abnormal trees.

Industrial wood: Commercial roundwood products, such as sawlogs, veneer logs, and pulpwood. Fuelwood and fence posts are excluded.

Log grades: A classification of logs based on external characteristics as indicators of quality or value of lumber the logs

will yield. Grade 1 is the highest quality, grade 2 intermediate, and grade 3 the lowest quality of standard hardwood factory lumber logs.¹ Grade 4 logs are suitable for ties and timbers.

Timber quality: Based on log grades unless stated otherwise. Characteristics of wood such as density, strength, color, and shrinkage, are also measures of quality. However, these are usually inherent in a species.

Inventory Procedure

Area and volume statistics presented in this report were developed plantation stand by plantation stand. First, individual forest plantations of 2 acres or more were identified and delineated on aerial photographs through stereoscopic study. Each plantation was given a stand number and classified as to type and stand-size group. The area of each plantation was measured from the photograph. Ownership and stand age were determined from maps and other records. Field examination of each plantation allowed for correcting delineations, classifications, and acreages.

Next, timber-volume plots were located on the ground in each commercial forest plantation of 5 acres and larger having sawtimber trees. The sample plot locations were selected at random from a grid of points overlaid on the aerial photograph. Two or more sample locations, depending on stand acreage and variability, were selected in each stand. At each location, tree measurements were made from which timber volume and quality could be computed and expanded. Detailed measurements were made on a "main" plot at each location, supplemented by additional but less detailed data on two "satellite" plots. All plots were variable plots with a basal area factor of 20.

Finally, the data were processed through a specially prepared computer program. Tree measurements were converted to meaningful volume units on a per-acre basis, averaged for the plots in a stand, and expanded for the acreage of the stand. The computer output consisted of tabular data for each stand and summaries of stand data by forest reserves. Volumetric data for stands 2 to 4 acres in size were extrapolated from closely similar measured stands and added to the computer processed data.

The accuracy goal for this inventory was ± 20 percent per 5 million net board feet of sawtimber in a stand, at the level of one standard error. The reliability of estimates for each forest reserve, based on measured stands only, are shown below.

¹U.S. Forest Products Laboratory. *Hardwood log grades for standard lumber--proposals and results.* U.S. Forest Serv. Forest Prod. Lab. Report 1737, 15 pp., illus. 1953.

Two chances out of three the estimated volume does not vary from the actual by greater than the sampling error indicated.

<i>Forest Reserve</i>	<i>Total volume</i> (M bd.ft.)	<i>Sampling error</i> (percent)
Halelea	109	13.6
Haupu	5,153	11.2
Lihue-Koloa	4,241	12.1
Moloaa	2,266	9.4
Na Pali-Kona	240	58.2
Nonou	1,723	15.2
Papapaholahola	799	16.2
Puu Ka Pele	3,985	16.8
Puu Ka Pele Park	282	9.6
Kokee Park	1,218	11.0
Waimea Canyon Park	78	60.1
Outside Forest Reserve	3,774	11.9

Tables

Table 1.--Area of forest plantations for all ownerships by forest type
and forest reserve, Island of Kauai, 1965

Forest reserve	Forest type			Total	Total	Total
	Commercial	Commercial	Commercial			
	eucalypts	hardwoods	conifers	types	types	types
Acres						
Halelea	8	4	--	12	5	17
Haupu	278	11	--	289	63	352
Kalepa	80	20	19	119	47	166
Kealia	15	7	--	22	--	22
Lihue-Koloa	228	128	37	393	146	539
Moloaa	71	95	25	191	--	191
Na Pali-Kona	--	--	198	198	--	198
Nonou	131	137	14	282	15	297
Papapaholahola	16	--	10	26	3	29
Puu Ka Pele	520	9	861	1,390	17	1,407
Puu Ka Pele Park	34	--	60	94	--	94
Kokee Park	57	51	27	135	--	135
Waimea Canyon Park	7	8	--	15	--	15
Outside Reserve	253	5	--	258	274	532
Total	1,698	475	1,251	3,424	570	3,994

Table 2.--Area of forest plantations by ownership class,^{1/} forest type and forest reserve,
Island of Kauai, 1965

Forest reserve and ownership	Forest type			Total commercial types	Total non- commercial types	Total all types			
	Commercial eucalypts	Other commercial hardwoods	Commercial conifers						
-----Acres-----									
State:									
Halelea	8	4	--	12	5	17			
Kalepa	54	20	19	93	6	99			
Kealia	12	7	--	19	--	19			
Lihue-Koloa	99	66	17	182	38	220			
Moloaa	71	95	25	191	--	191			
Na Pali-Kona	--	--	133	133	--	133			
Nonou	131	137	14	282	15	297			
Puu Ka Pele	103	2	336	441	6	447			
Puu Ka Pele Park	34	--	60	94	--	94			
Kokee Park	57	51	27	135	--	135			
Waimea Canyon Park	7	6	--	13	--	13			
Outside Reserve	--	--	--	--	12	12			
Total	576	388	631	1,595	82	1,677			
Hawaiian Homes:									
Na Pali-Kona	--	--	65	65	--	65			
Puu Ka Pele	417	7	525	949	11	960			
Waimea Canyon Park	--	2	--	2	--	2			
Outside Reserve	6	--	--	6	--	6			
Total	423	9	590	1,022	11	1,033			
Private:									
Haupu	278	11	--	289	63	352			
Kalepa	26	--	--	26	41	67			
Kealia	3	--	--	3	--	3			
Lihue-Koloa	129	62	20	211	108	319			
Outside Reserve	247	5	--	252	262	514			
Total	683	78	20	781	474	1,255			
County and Municipal:									
Papaholahola	16	--	10	26	3	29			
Island total	1,698	475	1,251	3,424	570	3,994			

^{1/} Ownership of plantation stands is based on interpretation of locations on Tax-Key maps and topographic maps which are often inadequate for precise determinations. Therefore, for a given plantation stand, the ownership designation may be in error, although over-all ownership statistics are probably not greatly affected by this kind of error.

Table 3.--Area of forest plantations by forest type, ownership class, and stand size class, Island of Kauai, 1965

Stand-size class and forest type	Ownership class					All ownerships	
	Hawaiian		Other	:			
	State	Homes	public	Private			
<u>Acres</u>							
Commercial types:							
Sawtimber stands							
Robusta eucalyptus	374	239	16	560	1,189		
Saligna eucalyptus	36	16	--	--	52		
Other eucalypts	29	88	--	81	198		
Silk-oak	20	2	--	--	22		
Molucca albizzia	205	--	--	69	274		
Other hardwoods	67	--	--	5	72		
Conifers	68	--	10	20	98		
Total	799	345	26	735	1,905		
Poletimber stands							
Robusta eucalyptus	--	--	--	4	4		
Saligna eucalyptus	3	--	--	--	3		
Other eucalypts	30	19	--	35	84		
Silk-oak	12	7	--	--	19		
Molucca albizzia	--	--	--	4	4		
Other hardwoods	8	--	--	--	8		
Conifers	3	--	--	--	3		
Total	56	26	--	43	125		
Seedling & sapling stands							
Saligna eucalyptus	46	52	--	--	98		
Other eucalypts	58	9	--	3	70		
Other hardwoods	76	--	--	--	76		
Conifers	560	590	--	--	1,150		
Total	740	651	--	3	1,394		
Total commercial	1,595	1,022	26	781	3,424		
Noncommercial types:							
Eucalyptus spp.	--	4	--	--	4		
Casuarina spp.	21	7	--	358	386		
Paper-bark	61	--	3	116	180		
Total noncommercial	82	11	3	474	570		
Total forest plantation	1,677	1,033	29	1,255	3,994		

Table 4.--Area of forest plantations by forest type and period planted,
Island of Kauai, 1965

Forest type	Period of planting				Total
	: 1906-1915	: 1916-1925	: 1926-1935	: 1936-1945	
Robusta eucalyptus	90	279	266	554	4
Saligna eucalyptus	--	--	--	52	3
Other eucalypts	3	68	21	137	56
Silk-oak	--	--	18	23	--
Albizia	--	94	139	41	4
Other hardwoods	--	--	36	36	8
Commercial conifers	--	18	42	41	--
Noncommercial	8	204	283	69	6
Total	101	663	805	953	81
					1,391
					3,994

Table 5.--Volume of growing stock and sawtimber, by species,
in planted sawtimber stands, Island of Kauai, 1965

Species	Growing stock		Sawtimber Thousand board feet
	Thousand cubic feet	:	
Blackbutt eucalyptus	39		213
Blackwood acacia	75		381
Brushbox	30		63
Eucalyptus spp.	209		935
Gray ironbark eucalyptus	82		246
Hoop pine	9		14
Kinogum eucalyptus	62		372
Koa	15		50
Lemon eucalyptus	87		418
West Indies mahogany	1		1
Molucca albizzia	905		5,130
Norfolk-Island-pine	318		1,538
Ohia	11		42
Red-ironbark eucalyptus	18		45
Redwood	42		233
Robusta eucalyptus	3,328		14,566
Saligna eucalyptus	267		1,651
Silk-oak	83		342
Sugi	83		390
Tallowwood eucalyptus	39		192
Tropical ash	10		32
Turpentine-tree	5		4
Total	5,718		26,858

Table 6.--Volume (in thousands of feet) of growing stock and sawtimber in planted sawtimber stands by ownership class^{1/} and species group, Island of Kauai, 1965

Species group	State			Hawaiian Homes			Private			County & municipal			All ownerships	
	Growing:			Growing:			Growing:			Growing:			Growing:	
	stock	: Sawtimber	stock	: Sawtimber	stock	: Sawtimber	stock	: Sawtimber	stock	: Sawtimber	stock	: Sawtimber	stock	: Sawtimber
Robusta eucalyptus	739	3,105	469	1,679	2,052	9,447	68	335	3,328	14,566				
Saligna eucalyptus	179	1,121	88	530	--	--	--	--	--	267	1,651			
Other eucalypts ^{3/}	92	366	148	463	331	1,659	--	--	--	571	2,488			
Silk-oak	46	173	9	29	27	140	1	--	--	83	342			
Molucca albizzia	695	3,976	--	--	210	1,154	--	--	--	905	5,130			
Other hardwoods ^{4/}	102	474	3	10	7	22	--	--	--	112	506			
Conifers ^{5/}	255	1,205	--	--	103	476	94	494	452	2,175				
Total	2,108	10,420	717	2,711	2,730	12,898	163	829	5,718	26,858				

^{1/} See footnote 1, Table 2.

^{2/} International 1/4-inch rule.

^{3/} Mainly *Eucalyptus* spp. but includes brushbox and turpentine-tree.

^{4/} Includes blackwood acacia, tropical ash, koa, ohia, and West Indies mahogany.

^{5/} Includes Norfolk-Island-pine, hoop-pine, redwood, and sugi.

Table 7.--Volume of sawtimber and growing stock in planted sawtimber stands
by species group and diameter class, Island of Kauai, 1965

Species group	:	All	:	Tree diameter class (inches at breast height)			-	-	-
				5.0-	11.0-	13.0-			
Robusta eucalyptus	:	14,566	--	1,506	2,145	2,405	2,637	5,239	613
Saligna eucalyptus	1,651	--	21	42	146	207	1,219	16	--
Other eucalypts ^{2/}	2,488	--	208	394	375	405	947	146	13
Silk-oak	342	--	73	68	53	63	85	--	--
Molucca albizzia	5,130	--	84	284	477	685	2,370	901	329
Other hardwoods ^{3/}	506	--	42	61	63	56	67	217	--
Conifers ^{4/}	2,175	--	169	226	487	433	842	18	--
Total	26,858	--	2,103	3,220	4,006	4,486	10,769	1,911	363
-									
Robusta eucalyptus	3,328	261	539	536	489	496	910	94	3
Saligna eucalyptus	267	2	7	9	27	34	185	3	--
Other eucalypts ^{2/}	571	73	77	90	76	71	160	22	2
Silk-oak	83	13	23	16	8	9	14	--	--
Molucca albizzia	905	29	26	55	85	116	390	146	58
Other hardwoods ^{3/}	112	9	17	14	13	11	46	2	--
Conifers ^{4/}	452	38	51	50	87	83	140	3	--
Total	5,718	425	740	770	785	820	1,845	270	63

1/ International 1/4-inch rule.

2/ Mainly *Eucalyptus* spp. but includes brushbox and turpentine-tree.

3/ Includes blackwood acacia, koa, West Indies mahogany, ohia, and tropical ash.

4/ Includes Norfolk-Island-pine, hoop-pine, redwood, and sugi.

Table 8.--Volume of cull trees in planted sawtimber stands by forest reserve and species group, Island of Kauai, 1965

Forest reserve	: Robusta : Saligna : eucalypts: 1/ :eucalyptus:euca-	: euca-	: Other : eucalypts: 1/ :Silk-oak:Albizia: 2/ :	: Other : hardwoods: conifers : 3/ :Silk-oak:Albizia: 2/ :species 4/ : species	: Commercial:Noncom-:		
					: Thousand cubic feet :-		
Halelea	1	--	--	1	--	--	--
Haupu	58	--	3	--	1	--	98
Kalepa	--	--	--	--	--	--	--
Kealia	1	--	--	--	--	--	1
Lihue-Koloa	30	--	4	1	4	3	58
Moloaa	--	--	--	--	2	--	102
Na Pali-Kona	--	--	--	--	--	--	1
Nonou	7	--	1	2	4	3	1
Papapaholahola	5	--	--	1	--	1	36
Puu Ka Pele	28	2	8	2	--	4	--
Puu Ka Pele Park	4	--	1	--	--	1	--
Kokee Park	5	--	1	--	--	6	2
Waimea Canyon Park	--	--	1	1	--	--	--
Outside Reserve	36	--	4	--	--	--	88
Total	175	2	23	7	12	16	490

1/ Mainly Eucalyptus spp. but includes brushbox and turpentine-tree.

2/ Includes blackwood acacia, tropical ash, koa, ohia, and West Indies mahogany.

3/ Includes Norfolk-Island-pine, hoop-pine, redwood, and sugi.

4/ Includes Casuarina spp., paper-bark, kukui, hau, Java plum, melochia, kolea, mango, and Pride-of-India.

Table 9.--Sawtimber volume in planted sawtimber stands by ownership class, species group, and log grade,^{1/} Island of Kauai, 1965

Ownership class and species group	:		Factory lumber logs		: Tie and timber logs:	
	All grades	Grade 1	Grade 2	Grade 3	Grade 4	Softwood species ^{2/}
----- Thousand board feet ^{3/} -----						
State:						
Robusta eucalyptus	3,105	462	313	653	1,677	--
Saligna eucalyptus	1,121	357	263	286	215	--
Other eucalypts ^{4/}	366	65	62	79	160	--
Silk-oak	173	11	--	19	143	--
Tropical ash	11	--	--	3	.8	--
Albizzia	3,976	1,649	698	889	740	--
Other hardwoods ^{5/}	463	81	71	122	189	--
Commercial conifers ^{6/}	1,205	--	--	--	--	1,205
Total	10,420	2,625	1,407	2,051	3,132	1,205
Hawaiian Homes:						
Robusta eucalyptus	1,679	47	54	255	1,323	--
Saligna eucalyptus	530	98	152	153	127	--
Other eucalypts ^{4/}	463	--	16	145	302	--
Silk-oak	29	--	--	11	18	--
Other hardwoods ^{5/}	10	--	--	2	8	--
Total	2,711	145	222	566	1,778	--
Private:						
Robusta eucalyptus	9,447	2,205	1,562	1,831	3,849	--
Other eucalypts ^{4/}	1,659	495	281	302	581	--
Silk-oak	140	44	33	37	26	--
Tropical ash	21	--	--	6	15	--
Albizzia	1,154	474	196	265	219	--
Other hardwoods ^{5/}	1	--	--	--	1	--
Commercial conifers ^{6/}	476	--	--	--	--	476
Total	12,898	3,218	2,072	2,441	4,691	476
County and Municipal:						
Robusta eucalyptus	335	119	70	61	85	--
Commercial conifers ^{6/}	494	--	--	--	--	494
Total	829	119	70	61	85	494
All Ownerships:						
Robusta eucalyptus	14,566	2,833	1,999	2,800	6,934	--
Saligna eucalyptus	1,651	455	415	439	342	--
Other eucalypts ^{4/}	2,488	560	359	526	1,043	--
Silk-oak	342	55	33	67	187	--
Tropical ash	32	--	--	9	23	--
Albizzia	5,130	2,123	894	1,154	959	--
Other hardwoods ^{5/}	474	81	71	124	198	--
Commercial conifers ^{6/}	2,175	--	--	--	--	2,175
Total	26,858	6,107	3,771	5,119	9,686	2,175

^{1/} Based on standard specifications for hardwood log grades for standard lumber.

^{2/} Commercial conifer species are not log-graded.

^{3/} International 1/4-inch rule.

^{4/} Mainly *Eucalyptus* spp. but includes brushbox and turpentine-tree.

^{5/} Includes blackwood acacia, koa, West Indies mahogany, ohia, and tropical ash.

^{6/} Includes Norfolk-Island-pine, hoop-pine, redwood, and sugi.

Table 10.--Listing of individual stands and plantings with species type, ownership, area, and volume, Island of Kauai, 1966

FORESTS PLANTED BEFORE 1957

Stand no. :	Species type	Owner ^{1/}	Acres	Total stand volume <u>Thousand board feet</u>
2001	Gray ironbark eucalyptus	111	4	19
2002	Red-ironbark eucalyptus	111	5	20
2003	Gray ironbark eucalyptus	111	9	43
2004	Mixed eucalyptus	111	12	42
2005	Robusta eucalyptus	111	40	118
2006	Robusta eucalyptus	111	30	109
2007	" "	112	2	6
2008	" "	112	7	7
2009	" "	112	7	23
2010	" "	112	4	12
2011	Robusta eucalyptus	112	7	21
2012	" "	112	27	195
2013	" "	111	9	37
2014	Brushbox	112	2	(2/)
2015	Robusta eucalyptus	112	2	6
2016	Robusta eucalyptus	112	2	6
2017	" "	112	2	6
2018	" "	112	3	9
2019	Brushbox	112	5	42
2020	Saligna eucalyptus	112	18	531
2021	Robusta eucalyptus	112	18	161
2022	" "	112	2	6
2023	" "	112	2	6
2024	Brushbox	111	9	(2/)
2025	Saligna eucalyptus	111	16	595
2026	Robusta eucalyptus	111	31	214
2027	" "	111	38	337
2028	Blackwood acacia	112	8	(2/)
2029	Robusta eucalyptus	112	2	23
2030	Blackwood acacia	112	5	64

See footnotes at end of Table.

Table 10, continued

FORESTS PLANTED BEFORE 1957

Stand no.	Species type	Owner	Acres	Total stand volume Thousand board feet
2031	Silk-oak	112	2	9
2032	" "	112	2	9
2033	" "	112	2	9
2034	" "	112	4	18
2035	Robusta eucalyptus	112	7	42
2036	Robusta eucalyptus	112	7	79
2037	" "	112	14	121
2038	" "	111	45	470
2039	" "	111	4	12
2040	Silk-oak	111	2	9
2041	Silk-oak	112	4	18
2042	" "	111	3	(2/)
2043	Gray ironbark	111	4	19
2044	" "	111	2	10
2045	Mixed eucalyptus	112	7	78
2046	Silk-oak	112	2	9
2047	" "	112	2	9
2048	Gray ironbark	111	24	31
2049	Tallowwood eucalyptus	111	8	54
2050	Mixed eucalyptus	111	7	69
2051	Robusta eucalyptus	111	13	66
2052	Ironwood	808	16	(3/)
2053	"	809	6	(3/)
2054	Robusta eucalyptus	236	4	55
2055	Molucca albizzia	236	8	169
2056	Molucca albizzia	112	7	156
2057	Brushbox	236	9	(2/)
2058	Norfolk-Island-pine	236	4	140
2059	Paper-bark	236	18	(3/)
2060	Molucca albizzia	236	7	122
2061	Robusta eucalyptus	236	5	75
2062	Mixed species	236	5	29
2063	Paper-bark	236	4	(3/)
2064	Molucca albizzia	236	4	89
2065	" "	112	29	533

See footnotes at end of Table.

Table 10, continued

FORESTS PLANTED BEFORE 1957

Stand no.	Species type	Owner	Acres	Total stand volume Thousand board feet
2066	Norfolk-Island-pine	112	3	105
2067	Molucca albizzia	236	27	626
2068	Norfolk-Island-pine	119	7	483
2069	Paper-bark	119	3	(3/)
2070	Robusta eucalyptus	119	16	316
2071	Norfolk-Island-pine	119	3	30
2072	" " "	112	8	280
2073	Robusta eucalyptus	112	3	42
2074	Paper-bark	112	3	(3/)
2075	Hoop-pine	112	4	14
2076	Mixed eucalyptus	214	48	518
2077	Molucca albizzia	141	9	163
2078	Robusta eucalyptus	141	7	110
2079	" "	141	2	28
2080	Molucca albizzia	141	3	54
2081	Paper-bark	141	16	(3/)
2082	Robusta eucalyptus	801	4	24
2083	Brushbox	139	9	(2/)
2084	Robusta eucalyptus	801	24	681
2085	" "	141	2	20
2086	Robusta eucalyptus	141	15	148
2087	" "	141	3	42
2088	" "	141	16	214
2089	Norfolk-Island-pine	141	3	35
2090	Robusta eucalyptus	112	5	109
2091	Norfolk-Island-pine	230	3	35
2092	Robusta eucalyptus	236	4	55
2093	" "	236	4	(2/)
2094	Paper-bark	112	2	(3/)
2095	Norfolk-Island-pine	141	4	47
2096	Brushbox	141	3	25
2097	Norfolk-Island-pine	112	2	23
2098	Paper-bark	141	13	(3/)
2099	" "	141	7	(3/)
2100	Turpentine-tree	112	4	4

See footnotes at end of Table.

Table 10, continued

FORESTS PLANTED BEFORE 1957

Stand no.	Species type	Owner	Acres	Total stand volume <u>Thousand board feet</u>
2101	Paper-bark	141	14	(3/)
2102	Ironwood	141	23	(3/)
2103	Norfolk-Island-pine	141	3	35
2104	" " "	141	3	35
2105	Brushbox	141	7	(2/)
2106	Robusta eucalyptus	141	28	773
2107	Mixed eucalyptus	236	11	101
2108	Lemon eucalyptus	236	3	75
2109	Mixed eucalyptus	236	5	124
2110	Robusta eucalyptus	236	8	131
2111	Paper-bark	112	12	(3/)
2112	Robusta eucalyptus	112	4	12
2113	" "	214	2	28
2114	" "	214	3	42
2115	Mixed eucalyptus	214	4	43
2116	Robusta eucalyptus	801	32	978
2117	" "	214	2	39
2118	" "	214	6	117
2119	" "	214	4	78
2120	Mixed eucalyptus	111	4	(2/)
2121	Molucca albizzia	214	11	205
2122	Paper-bark	214	5	(3/)
2123	Ironwood	214	15	(3/)
2124	Robusta eucalyptus	214	12	186
2125	" "	214	10	23
2126	Robusta eucalyptus	214	3	7
4/ 2132	Robusta eucalyptus	246	20	385
2133	" "	246	4	77
2134	" "	214	3	34
2135	Robusta eucalyptus	214	14	434
2136	" "	214	6	247
2137	" "	214	13	231
2138	" "	214	3	34
2139	Ironwood	214	8	(3/)

See footnotes at end of Table.

Table 10, continued

FORESTS PLANTED BEFORE 1957

Stand no.	Species type	Owner	Acres	Total stand volume Thousand board feet
2140	Mixed eucalyptus	214	3	34
2141	Robusta eucalyptus	214	3	42
2142	" "	214	33	378
2143	" "	214	5	188
2144	Ironwood	214	8	(3/)
2145	Ironwood	214	8	(3/)
2146	"	214	20	(3/)
2147	"	214	5	(3/)
2148	Robusta eucalyptus	214	23	349
2149	" "	214	16	204
2150	Robusta eucalyptus	214	4	61
2151	" "	801	38	573
2152	Ironwood	801	30	(3/)
2153	Robusta eucalyptus	801	64	1,542
2154	Ironwood	801	8	(3/)
2155	Robusta eucalyptus	801	62	656
5/2158	Brushbox	112	11	1
5/2160	Molucca albizzia	112	68	2,265
2161	Robusta eucalyptus	111	6	91
2162	" "	139	3	46
2163	Molucca albizzia	112	2	21
2164	Norfolk-Island-pine	112	4	47
2165	" " "	112	6	70
2166	Ironwood	233	67	(3/)
2167	"	214	13	(3/)
2168	Robusta eucalyptus	214	4	46
2169	Ironwood	233	13	(3/)
2170	"	801	10	(3/)
2171	Ironwood	803	6	(3/)
2172	Robusta eucalyptus	112	36	457
2173	Molucca albizzia	112	4	89
2174	Robusta eucalyptus	233	25	556
2175	Ironwood	233	6	(3/)

See footnotes at end of Table.

Table 10, continued

FORESTS PLANTED BEFORE 1957

Stand no.	Species type	Owner	Acres	Total stand volume Thousand board feet
2176	Ironwood	233	6	(3/)
2177	Molucca albizzia	112	4	89
2178	Paper-bark	233	12	(3/)
2179	" "	233	3	(3/)
2180	Robusta eucalyptus	112	4	24
2181	Molucca albizzia	112	13	138
2182	Ironwood	112	7	(3/)
2183	Robusta eucalyptus	112	24	349
2184	Ironwood	112	8	(3/)
2185	Robusta eucalyptus	112	36	216
2186	Molucca albizzia	112	6	94
2187	Mixed eucalyptus	139	4	(2/)
2188	Brushbox	139	7	(2/)
2189	Ironwood	233	7	(3/)
2190	Red-ironbark eucalyptus	111	5	16
2191	Saligna eucalyptus	112	18	664
2192	Silk-oak	111	2	(2/)
2193	" "	111	2	(2/)
2194	Red-ironbark eucalyptus	111	3	10
2195	Ironwood	111	7	(3/)
2196	Robusta eucalyptus	111	23	280
2197	Paper-bark	214	19	(3/)
2198	" "	214	2	(3/)
2199	Robusta eucalyptus	214	2	28
2200	Ironwood	214	7	(3/)
2201	Ironwood	214	4	(3/)
2202	Robusta eucalyptus	214	3	34
2203	Brushbox	112	5	(2/)
2204	Paper-bark	112	6	(3/)
2205	Robusta eucalyptus	112	4	60
2206	Robusta eucalyptus	112	25	345
2207	" "	112	3	34
2208	" "	112	10	158
2209	Mixed eucalyptus	112	2	22
2210	Blackwood acacia	112	23	293

See footnotes at end of Table.

Table 10, continued

FORESTS PLANTED BEFORE 1957

Stand no.	Species type	Owner	Acres	Total stand volume <u>Thousand board feet</u>
2211	Robusta eucalyptus	112	4	45
2212	" "	112	12	152
2213	Silk-oak	112	2	9
2214	Sugi	112	3	(2/)
2215	"	112	10	240
2216	Robusta eucalyptus	112	5	86
2217	Sugi	112	10	124
2218	"	112	11	47
2219	Redwood	112	6	237
2220	Paper-bark	112	30	(3/)
2221	Robusta eucalyptus	112	8	71
2222	" "	112	58	174
2223	Norfolk-Island-pine	112	4	47
2224	Mixed species	112	36	110
2225	Molucca albizzia	112	20	161
2226	Robusta eucalyptus	112	3	18
2227	Gray ironbark eucalyptus	112	2	9
2228	Robusta eucalyptus	112	4	24
2229	Molucca albizzia	112	48	411
2230	Silk-oak	112	12	(2/)
2231	Gray ironbark eucalyptus	112	2	(2/)
2232	Brushbox	112	6	(2/)
2233	Ironwood	139	41	(3/)
2234	Eucalyptus species	139	3	18
2235	Robusta eucalyptus	141	4	39
2236	Ironwood	141	10	(3/)
2237	Robusta eucalyptus	141	4	39
2238	Molucca albizzia	141	4	(2/)
2239	Ironwood	236	9	(3/)
2240	"	803	6	(3/)
2241	Turpentine-tree	112	2	(2/)
2242	Robusta eucalyptus	112	3	66
2243	Molucca albizzia	112	4	32
2244	Robusta eucalyptus	141	4	39
2245	" "	112	4	55

See footnotes at end of Table.

Table 10, continued

FORESTS PLANTED BEFORE 1957

Stand no.	Species type	Owner	Acres	Total stand volume Thousands board feet
2246	Robusta eucalyptus	112	4	55
2247	Paper-bark	236	3	(3/)
2248	" "	112	3	(3/)
2249	Gray ironbark eucalyptus	111	10	(2/)
2250	Eucalyptus species	112	3	9
2251	Brushbox	112	2	(2/)
2252	Blackwood acacia	112	3	38
2253	Robusta eucalyptus	214	4	61
2254	Ironwood	801	6	(3/)
2255	"	112	6	(3/)
2256	Paper-bark	112	5	(3/)
2257	Brushbox	139	3	(2/)
2258	"	112	3	(2/)
2259	"	112	3	(2/)
2260	Turpentine-tree	112	3	(2/)
2261	Saligna eucalyptus	112	3	(2/)
2262	Brushbox	112	2	(2/)
Total Forest Plantation		--	2,603	26,858

AREAS REFORESTED 1957-65^{6/}

Kokee area:				
--	Saligna eucalyptus	111	52	(2/)
--	Mixed eucalyptus	111	9	(2/)
--	Pines	111	590	(2/)
--	Pines	112	516	(2/)
Total Kokee		--	1,167	--
Kalepa area:				
--	Mixed eucalyptus	112	25	(2/)
--	Mixed species	112	20	(2/)
--	Pines	112	19	(2/)
Total Kalepa		--	64	--

See footnotes at end of Table.

Table 10, continued

AREAS REFORESTED 1957-65^{6/}

Stand no. :	Species type	Owner	Acres	Total stand volume Thousand board feet
Lihue-Koloa area:				
--	Saligna eucalyptus	112	8	(2/)
--	Mixed eucalyptus	112	13	(2/)
--	Mixed species	112	29	(2/)
Total Lihue-Koloa		--	50	--
Moloaa area:				
--	Saligna eucalyptus	112	40	(2/)
--	Mixed eucalyptus	112	20	(2/)
--	Mixed species	112	25	(2/)
--	Norfolk-Island-pine	112	25	(2/)
Total Moloaa		--	110	--
Total reforestation area		--	1,391	--
Total all forest plantations		--	3,994	--

^{1/} Code number used:

111 = owned by Hawaiian Homes Commission

112 = owned by State of Hawaii

119 = owned by County and Municipal Governments

All other numbers = privately owned.

^{2/} Poletimber or seedling and sapling stands.^{3/} Noncommercial plantation type.^{4/} Stand Numbers 2127-31 not used.^{5/} Stand Numbers 2156, 2157, and 2159 not used.^{6/} No stand numbers assigned.

Table 11.--Identity of individual plantation stands in the groups shown on the map "Forest Plantations on the Island of Kauai--1965"^{1/}

Group: stand: no. :	Individual stand no.	:Group: stand: : no. :	Individual stand no.
1	2054-75, 92-94, 97, 2100, 72-73, 21 77, 2205-06, 45-48	21	2111-12, 2220-21 22
2	2088-89	23	2222-27 2163-65, 80-86, 2228-30
3	2077-81, 85-87, 95-96, 98-99, 2101, 04-05, 2238, 44	24	2178-79 25
4	2102-03, 2235-37		2175-76
5	2107-10, 2239	26	2174
6	2091	27	2161-62
7	2113-14, 41	28	2132-33, 58, 60, 71, 2240
8	2197	29	2052-53, 90, 2242-43, 56
9	2106	30	2028-29, 2210, 13-19, 52
10	2117-19, 21-26	31	2033-36, 2207-09, 11-12, 50-51 32
11	2076, 2115-16, 55, 2254	33	2030-32 2008-12
12	2146-50, 2201, 53	34	2001-02, 06-07, 2190, 94
13	2198-99, 2200, 02	35	2003, 13, 2120
14	2082, 84, 2151-54, 70	36	2014-18
15	2138-40, 42-45	37	2022, 2192
16	2134-37, 66-69	38	2004-05, 23, 2193
17	2189	39	2019-21, 24-27, 37-41, 2191, 95-96, 2255
18	2233-34		
19	2083, 2187-88, 2241, 57-62	40	2042-51, 2249
20	2203-04, 31-32		

^{1/} Unnumbered stands on the map are identified by symbols as follows:

KORP--Kokee reforestation planting, 1957-65; includes seedling, sapling, and pole timber.

KARP--Kalepa reforestation planting, 1957-65; includes seedling, sapling, and pole timber.

LKRP--Lihue-Koloa reforestation planting, 1957-65; includes seedling, sapling, and pole timber.

MRP --Moloaa reforestation planting, 1957-65; includes seedling, sapling, and pole timber.

See table 10.

